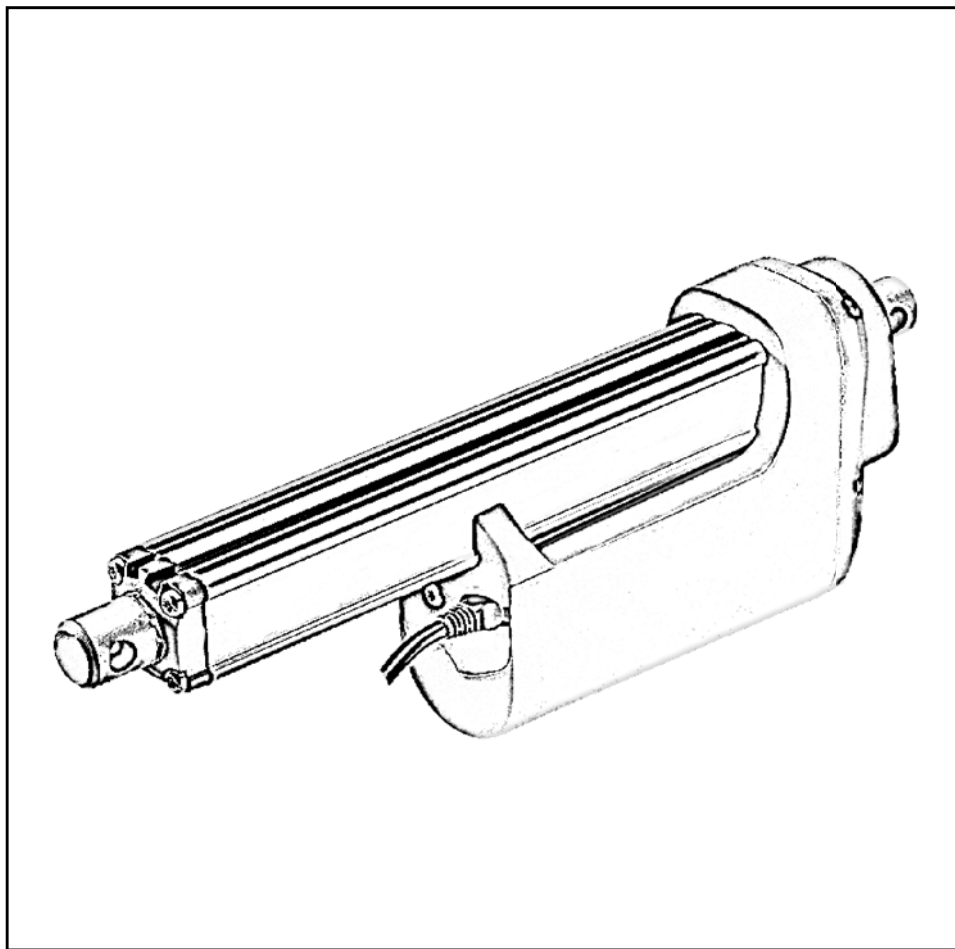


LA36 ACTUATOR



To learn more about LINAK, please visit:

WWW.LINAK.COM

Contents

- Preface** 4
- Safety instructions** 5
- Declarations of conformity** 6
- Misc. on the TECHLINE™ actuator system**
 - Warranty 8
 - Maintenance 8
 - Maintenance of spherical eyes 8
- Specifications** 9
- Mounting guidelines** 10
- Applications hints** 11
- Manual hand crank** 11
- Electrical installation**
 - Motor connection 12
 - Connection diagrams 12
- Connection of LA36 with CS16** 15
- Troubleshooting** 15
- Mounting of cables** 16
- Accessories** 16
- Drawings (Dimensions)** 17
- Main groups of disposal** 18
- Label for LA36** 18
- Addresses** 20

Preface

We are delighted that you have chosen a product from LINAK. LINAK systems are high-tech products based on many years of experience in the manufacture and development of actuators, electronic control boxes, controls, and chargers. We are also constantly improving our products to meet customer requirements.

This user manual will tell you how to install, use, and maintain your LINAK LA36 actuator.

We are sure that the LA36 actuator will give you a problem-free operation. Before our products leave the factory they undergo full function and quality testing. Should you nevertheless experience problems with your LINAK products, you are always welcome to contact our service departments or service centres.

Most LINAK subsidiaries have authorised service centres, which are always ready to help you.

LINAK provides a warranty on all its products. This warranty, however, is subject to correct use in accordance with the specifications, maintenance being done correctly and any repairs being carried out at a service centre, which is authorised to repair LINAK products.

LINAK A/S

Safety instructions



Please read the following safety information carefully.

Ensure that all staff who are to connect, mount, or use the actuator are in possession of the necessary information and that they have access to this user manual.

Persons who do not have the necessary experience or knowledge of the product/products must not use the product/products. Besides, persons with reduced physical or mental abilities must not use the product/products, unless they are under surveillance or they have been thoroughly instructed in the use of the apparatus by a person who is responsible for the safety of these persons.

Moreover, children must be under surveillance to ensure that they do not play with the product.

Before you start mounting/dismounting, ensure that the following points are observed:

- The actuator is not in operation.
- The mains current supply is switched off and the plug has been pulled out.
- The actuator is free from loads that could be released during this work.

Before you put the actuator into operation, check the following:

- The actuator is correctly mounted as indicated in the relevant user instructions.
- The equipment can be freely moved over the actuator's whole working area.
- The actuator is connected to a mains electricity supply/transformer with the correct voltage and which is dimensioned and adapted to the actuator in question.
- Ensure that the voltage applied matches to the voltage specified on the actuator label.
- Ensure that the connection bolts can withstand the wear.
- Ensure that the connection bolts are secured safely.

During operation

- Listen for unusual sounds and watch out for uneven running. Stop the actuator immediately if anything unusual is observed.
- Do not sideload the actuator.
- Use only the actuator within the specified working limits.
- Do not step or kick on the actuator.

When the equipment is not in use

- Switch off the mains supply or pull out the plug in order to prevent unintentional operation.
- Check regularly the actuator and joints for extraordinary wear.
- Reinstall always the cablelock and a tight screw with 1,5 Nm +/- 20%

Classification

The equipment is not suitable for use in the presence of a flammable anaesthetic mixture with air or with oxygen or nitrous oxide.

Important information

Information about the actuators is described under the following two headings:



Warning!

Failing to follow these instructions can cause accidents resulting in serious personal injury.



Failing to follow these instructions can result in the actuator suffering damage or being ruined.

DECLARATION OF CONFORMITY

LINAK A/S
Smedevænget 8
DK - 6430 Nordborg

hereby declares that LINAK Actuator Systems composed of:

12 V Battery and Linear Actuator 36xxxxxxxx*xx (* = 1 or A),

complies with the EMC-directive 89/336/EØF according to the standards
EN 61000-6-4:2001 (Electromagnetic compatibility, industry, emission)
EN 61000-6-2:2001 (Electromagnetic compatibility, industry, immunity)
EN 61000-6-3:2001 (Electromagnetic compatibility, residential, commercial
and light-industry, emission)
EN 61000-6-1:2001 (Electromagnetic compatibility, residential, commercial
and light-industry, immunity)

Machinery Directive 98/37/EC Attachment IIB: LINAK A/S prohibit that the
actuator system is put into service until the machinery into which the actuator
system is to be incorporated has been declared in conformity with the
provisions of all relevant directives

Date: 2005-05-13

Signature:


(Hans Schou Christensen)

DECLARATION OF CONFORMITY

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hereby declares that LINAK Actuator Systems composed of:

24 V Battery and Linear Actuator 36xxxxxxxx*xx (* = 2 or B),

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and light-industry, emission)
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and light-industry, immunity)

Machinery Directive 98/37/EC Attachment IIB: LINAK A/S prohibit that the
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provisions of all relevant directives

Date: 2005-05-13

Signature:



(Hans Schou Christensen)

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complies with the EMC-directive 89/336/EØF according to the standards
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EN 61000-6-2:2001 (Electromagnetic compatibility, industry, immunity)
EN 61000-6-3:2001 (Electromagnetic compatibility, residential, commercial
and light-industry, emission)
EN 61000-6-1:2001 (Electromagnetic compatibility, residential, commercial
and light-industry, immunity)

Machinery Directive 98/37/EC Attachment IIB: LINAK A/S prohibit that the
actuator system is put into service until the machinery into which the actuator
system is to be incorporated has been declared in conformity with the
provisions of all relevant directives

Date: 2005-08-24

Signature:



(Hans Schou Christensen)

Misc. on the TECHLINE™ actuator system

Warranty

There is a 12 months' warranty on the TECHLINE products against manufacturing faults calculated from the production date of the individual products (see label). LINAK's warranty is only valid in so far as the equipment has been used and maintained correctly and has not been tampered with. Furthermore, the actuator must not be exposed to violent treatment. In the event of this, the warranty will be ineffective/invalid. For further details, please see LINAK A/S ordinary conditions of sale.

Maintenance

- The actuator must be cleaned at regular intervals to remove dust and dirt and inspected for mechanical damages or wear.
- Inspect attachment points, wires, piston rod, cabinet, and plug, as well as check that the actuator functions correctly.
- The actuator is a closed unit and requires no internal maintenance.
- To ensure that the pregreased inner tube remains lubricated, the actuator must only be washed down when the piston rod is fully retracted.

Maintenance of spherical eyes

In order to maintain a proper performance of the spherical eyes and to increase the resistances against hard environmental wear, we strongly recommend that the spherical (ball bearings) eyes mounted on actuators from LINAK are greased with anticorrosive grease or similar.



Warning!

If irregularities are observed, the actuator must be replaced.

Specifications

Motor:	Permanent magnet motor 12, 24, or 36V *
Motor protection:	Automatic protection resets thermal overload
Cable:	Motor: 2 x 14 AWG PVC cable Control: 6 x 20 AWG PVC cable **
Gear ratio:	4 different gear ratios available in steel (2,600 N/1,700 N, 4,500 N, and 10,000 N)
Slip clutch:	Mechanical - overload protection through an integrated slip clutch is optional adjusted to 1.2-1.4 times max. load
Brake:	Integrated brake ensures a high self-locking ability. The brake is deactivated when the actuator is powered in order to obtain a high efficiency
Hand crank:	As a standard feature the actuator can be operated manually
Housing:	The housing is made of casted aluminium, coated for outdoor out and in harsh conditions
Spindle part:	Outer tube: Extended aluminium anodised Inner tube: Stainless steel AISi304/SS2333 Acme spindle: Trapezoidal spindle with high efficiency
Temperature range:	- 30° C to +65° C - 22° F to +150° F Full performance +5° C to +40° C
End play:	2 mm maximum
Weather protection:	Rated IP66 for outdoor use. Furthermore, the actuator can be washed down with a high-pressure washer.

* BUS actuators only 24V - please see the installation guide.

** Special control cables for BUS actuator - please see the installation guide.

Mounting guidelines

LINAK® linear actuators are quickly and easily mounted by slipping pins through the holes on each end of the units and into brackets on the machine frame and the load.

The mounting pins must be parallel to each other as shown in Figure 1. Pins, which are not parallel to each other, may cause the actuator to bend and be damaged.

The load should act along the stroke axis of the actuator since off centre loads may cause bending and lead to premature failure. See Figure 2.

Make sure the mounting pins are supported in both ends. Failure to do so could shorten the life of the actuator. Cantilever mounts are unacceptable.

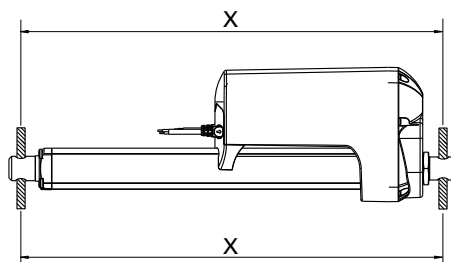


Figure 1

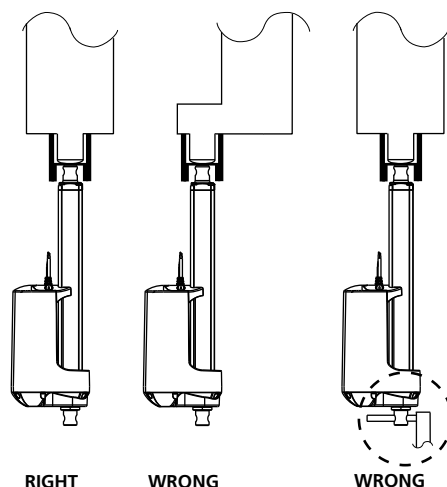


Figure 2



Warning!

If the actuator is used for pull in an application where personal injury can occur, the following is valid:

It is the application manufacturer's responsibility to incorporate a suitable safety arrangement, which will prevent personal injury from occurring, if the actuator should fail.



Warning!

LINAK's actuators are not constructed for use within the following fields:

- Offshore installations
- Aeroplanes and other aircraft
- Explosive environments
- Nuclear power generation

Application hints

The actuator is weatherproof for use in outdoor applications. The actuator can be washed down with a high-pressure washer, but it should not be used under water.

Optionally the actuator is overload protected with a slip clutch. The clutch will slip when the load exceeds approx. 1.2 - 1.4 times the actuator's rating.

The duty cycle at max. load is 20% on time. This means if the actuator runs continuously for 20 seconds it must remain off for 80 seconds before operating again.

Manual hand crank

The manual hand crank can be used in the case of power failure.



The cover over the Allen key socket must be unscrewed before the Allen key can be inserted and the hand crank operated.

Hand Crank Torque: 6 - 8 Nm (2600 N – 6800 N load)

Piston rod movement per turn	Gear A = 10.5 mm
	Gear B = 6.0 mm
	Gear C = 4.0 mm



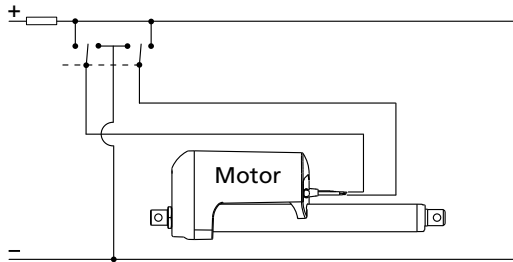
Note: if the actuator is operated as a hand crank, it must be operated by hand, otherwise there is a risk of overloading the actuator and hereby damage the actuator.

Electrical installation

Be aware of BUS actuator - please see the installation guide.

Motor connection

Wiring: The actuator direction (forward, reverse) is controlled with a doublethrow switch with the centre position "off".



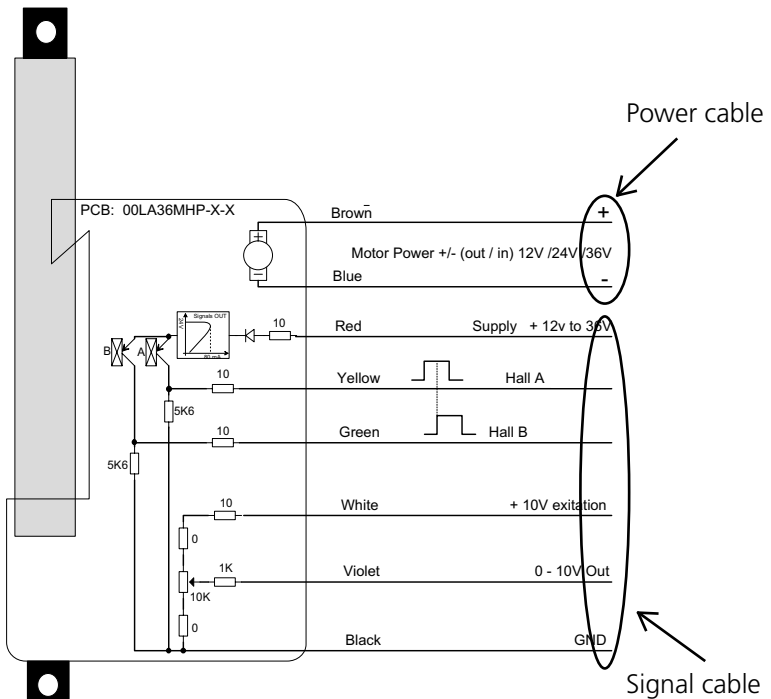
Actuation

To extend the actuator, connect brown to positive and blue to negative.

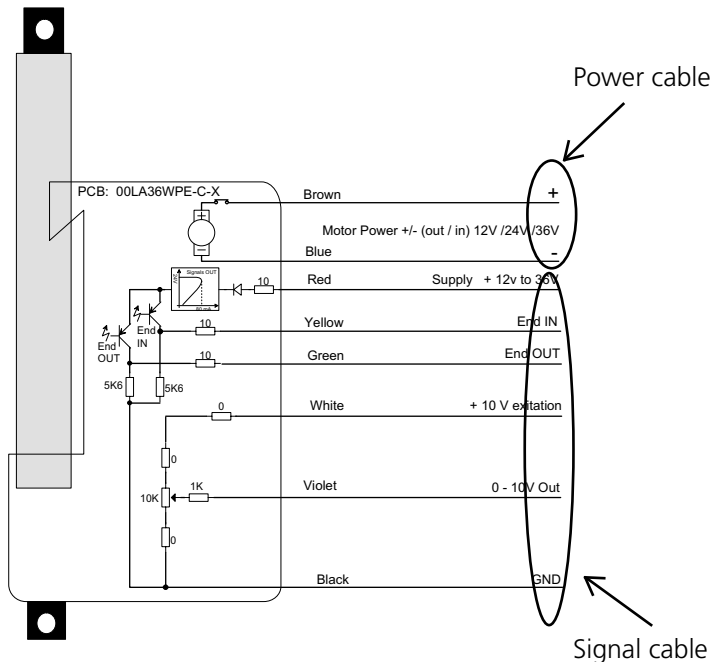
To retract the actuator, connect blue to positive and brown to negative.

Connection diagrams:

Connections diagram: For 36xxxxx0H/Pxxxxxx and 36xxxxx1H/Pxxxxxx

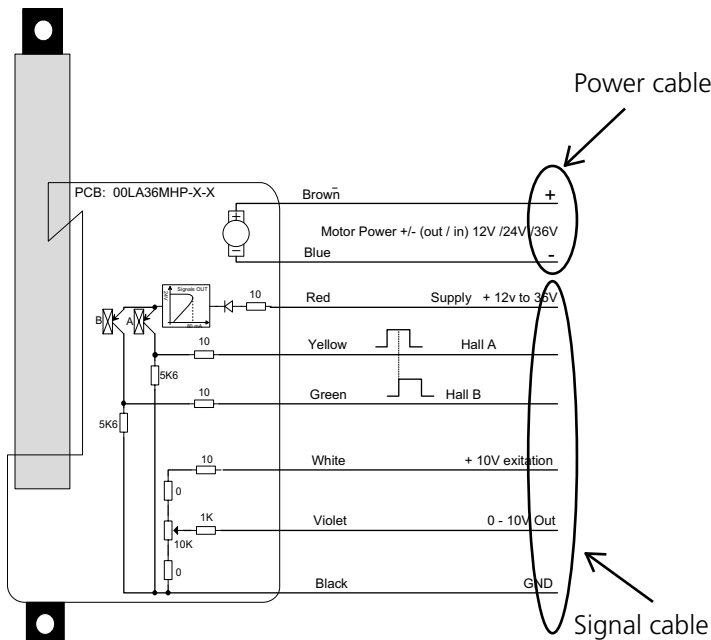


Connections diagram: For 36xxxxx2Pxxxxxx and 36xxxxx20xxxxxx:

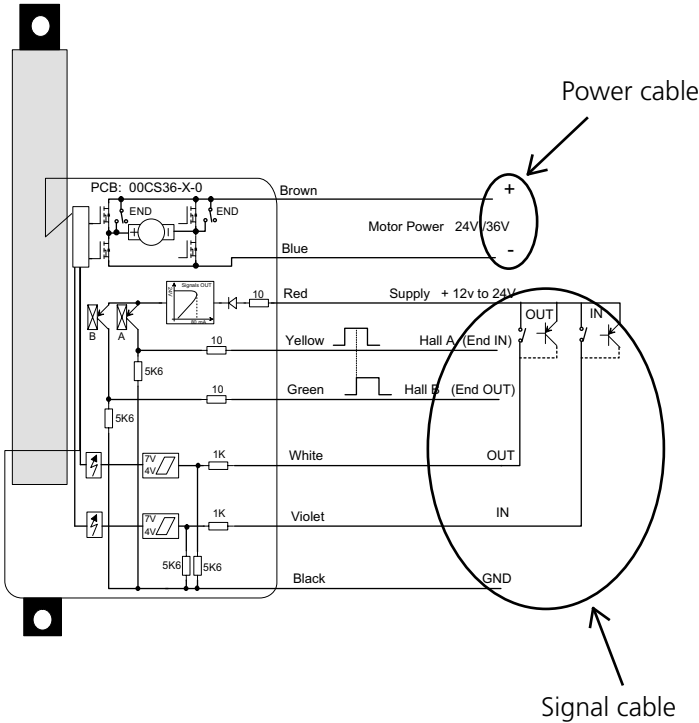


Note:
If you wish to use the end-stop signals, you will have to keep power on the brown and blue wires, otherwise the signal will be lost.

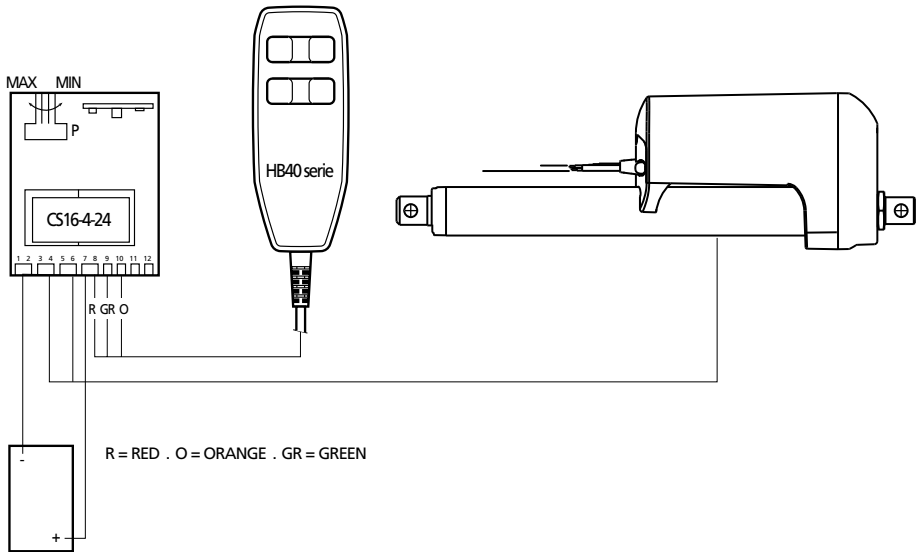
Connections diagram: For 36xxxxx2Hxxxxxx



Connections diagram: For 36xxxxx3xxxxBxx + 36xxxxx40xxxBxx:



Connection of the LA36 with the CS16

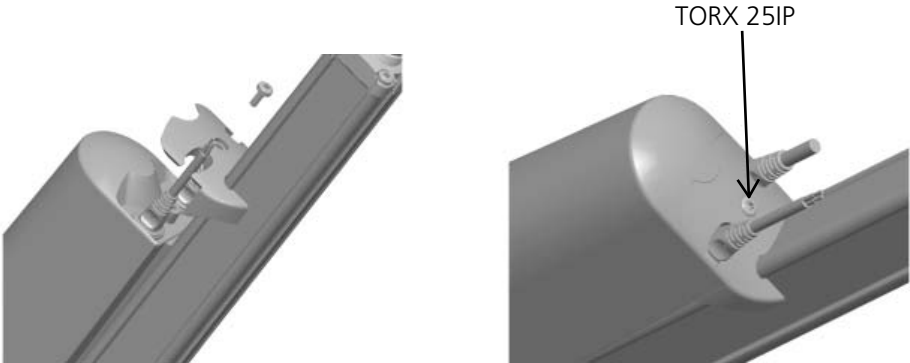


Troubleshooting

Symptom	Possible cause	Action
No motor sound or movement of piston rod	<ul style="list-style-type: none">• The actuator is not connected to the power supply• Cable damaged	<ul style="list-style-type: none">• Connect the actuator to the power supply• Change cable• Send actuator for repair
Excessive electricity consumption	<ul style="list-style-type: none">• Misalignment or overload in application	<ul style="list-style-type: none">• Align or reduce load• Send actuator for repair
Motor runs but spindle does not move	<ul style="list-style-type: none">• Gearwheel or spindle damaged	<ul style="list-style-type: none">• Send actuator for repair
Actuator cannot lift full load	<ul style="list-style-type: none">• Clutch is worn• Motor is damaged	<ul style="list-style-type: none">• Send actuator for repair
No signal from potentiometer or hall effect sensor	<ul style="list-style-type: none">• Cable damaged• Potentiometer damaged	<ul style="list-style-type: none">• Change cable• Send actuator for repair
Motor runs too slowly or does not give full force	<ul style="list-style-type: none">• Insufficient power supply• Voltage drop in cable	<ul style="list-style-type: none">• Increase power supply• Thicker cable
Actuator cannot hold the chosen load	<ul style="list-style-type: none">• Load is higher than specified	<ul style="list-style-type: none">• Reduce load

Be aware of BUS actuator - please see the installation guide.

Mounting of cables



- Unscrew the cover and remove the two blind plugs
- Plug in the power cable and/or the signal cable
- Slide the cover onto the actuator

The torque of the cover screw is +/- 0.3 Nm



Note: When changing the cables on a LINAK actuator, it is important that this is done carefully, in order to protect the plugs and pins. Please be sure that the plug is in the right location and fully pressed in before the cable lid is mounted.

Accessories

Cables:

Power cables (Ordered separately)	Order no.
1.5 m cable	0367002-1500
5 m	0367002-5000
0.2 m cable (AMP connectors)	0367006

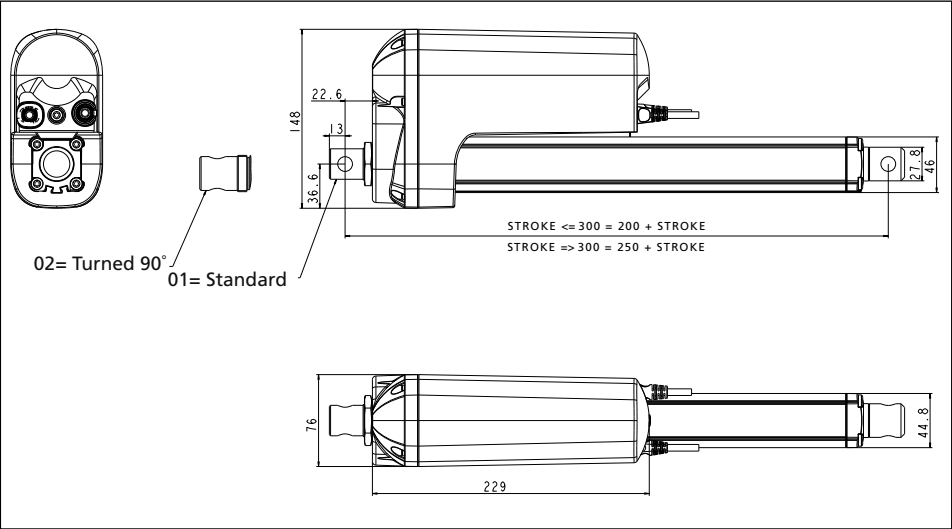
Signal cable (Ordered separately)	Order no.
1.5 m cable	0367003-1500
5 m	0367003-5000

Be aware of BUS actuator - please see the installation guide.

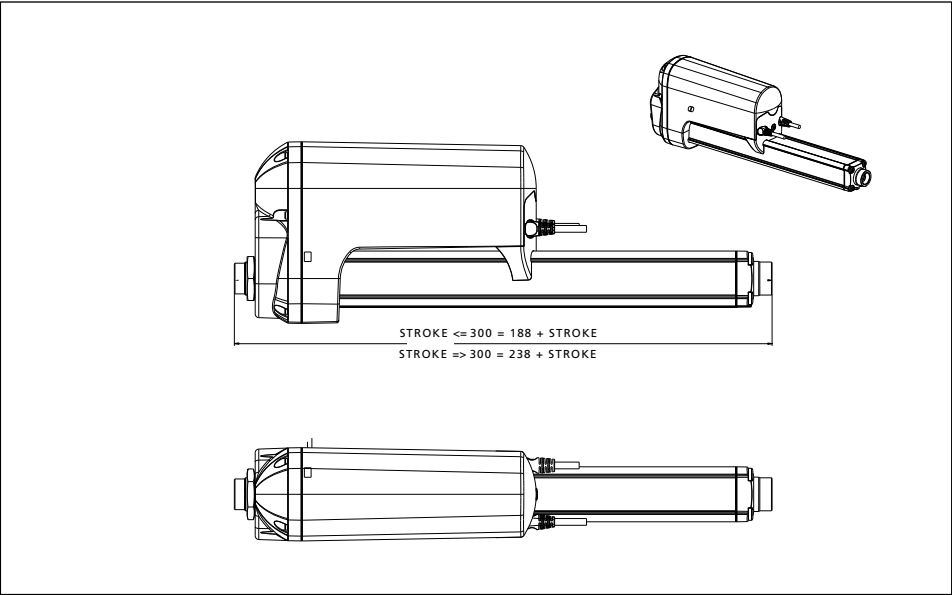
DRAWING APPENDIX

TECHLINE™ LA36:

LA36



LA36 with adapter



Main groups of disposal

Product	Metal scrap	Cable scrap	Electronic scrap	Plastic recycling or combustion
LA36	X	X	X	X

LINAK’s products may be disposed of, possibly by dividing them into different waste groups for recycling or combustion.

We recommend that our product is disassembled as much as possible at the disposal and that you try to recycle it. As examples of main groups within sorting of waste we can mention the following:

- Metal scrap
- Plastic scrap
- Cable scrap
- Combustible material and collection for recoverable resources.

Some of these main groups can be sub-divided into groups e.g. metal can be divided into steel and aluminium or plastic can be divided into ABS and PP.

Label for LA36



LINAK APPLICATION POLICY

The purpose of the application policy is to define areas of responsibilities in relation to applying a LINAK product defined as hardware, software, technical advice, etc. related to an existing or new customer application.

LINAK products as defined above are applicable for a wide range of applications within the Medical, Furniture, Desk, and Industry areas. Yet, LINAK cannot know all the conditions under which LINAK products will be installed, used, and operated, as each individual application is unique.

The suitability and functionality of the LINAK product and its performance under varying conditions (application, vibration, load, humidity, temperature, frequency, etc.) can only be verified by testing, and shall ultimately be the responsibility of the LINAK customer using any LINAK product.

LINAK shall be responsible solely that the LINAK products comply with the specifications set out by LINAK and it shall be the responsibility of the LINAK customer to ensure that the specific LINAK product can be used for the application in question.

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However, due to continuous development in order to improve its products, LINAK products are subject to frequent modifications and changes without prior notice. Therefore, LINAK cannot guarantee the correct and actual status of said information on its products.

While LINAK uses its best efforts to fulfil orders, LINAK cannot, for the same reasons as mentioned above, guarantee the availability of any particular product. Therefore, LINAK reserves the right to discontinue the sale of any product displayed on its website or listed in its catalogues or other written material drawn up by LINAK.

All sales are subject to the Standard Terms of Sale and Delivery for LINAK. For a copy hereof, please contact LINAK.

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